IN THE SPECIFICATION:

Please amend the first full paragraph appearing on page 2 as follows:

~~Cross Reference~~ Cross-Reference to Related Application: This application is a continuation of application Serial No. 08/929,843, filed September 15, 1997, ~~pending.~~ now U.S. Patent 6,048,744, issued April 11, 2000.

Please amend the second full paragraph appearing on page 2 as follows:

Field of the Invention: The present invention relates generally to integrated circuits. More particularly, it pertains to alignment features ~~far~~ for integrated circuit packages.

Please amend the fifth full paragraph appearing on page 2 as follows:

In the burn-in test process, integrated circuits are subjected to a high level of stressful conditions, including high temperatures and high voltage. During a typical ~~burn-in~~ burn-in test, thousands of integrated circuits are inserted in burn-in boards, which allow electrical connectivity to the individual integrated circuits.

Please amend the fourth full paragraph appearing on page 3 as follows:

The above-mentioned problems with testing of integrated circuits are addressed by the present invention ~~and which~~ which will be understood by reading and studying the following specification. An apparatus and method for testing integrated circuits is described which allows for proper alignment of leads from a lead frame during the testing process. Alternatively, the alignment features could be used during other processing steps, such as during the solder reflow process. Advantageously, the apparatus and method permit testing of the integrated circuit with reduced risk of misalignment of and damage to conductors of the lead frame.

Please amend the paragraph bridging pages 3 and 4 as follows:

A conductive apparatus has an alignment feature integral therewith. In one embodiment, the conductive apparatus comprises a lead frame and the alignment feature comprises an

alignment tab. The alignment tab can have a number of shapes, including, but not limited to, generally square or circular shapes. In addition, the alignment tab or tabs can include two or more apertures for additional alignment options. The alignment feature can also comprise a ~~semi-circular-shaped~~ semicircular-shaped cut out on one or more edges of the lead frame. The cut out can be formed in other shapes, such as square or angular shapes.

Please amend the first full paragraph appearing on page 4 as follows:

Alternatively, an integrated circuit is provided which comprises, in part, a lead frame, a semiconductor die coupled with the lead frame, an alignment feature disposed on the lead frame, and insulating material encompassing the die and a portion of the lead frame. The lead frame has a plurality of conductors which ~~extend~~ extends out of the insulating material. In one embodiment, the alignment feature comprises an alignment tab. The alignment tab can be removably coupled with the lead frame, for instance, with a perforation line. When an integrated circuit manufacturer desires to remove the alignment tab, the tab is folded over the perforation line until the tab is severed from the lead frame.

Please amend the second full paragraph appearing on page 6 as follows:

After the fabricated silicon wafers reach assembly, the dice are then carried through a number of steps to become individual units in leaded packages. After packaging, tests are performed to ensure that the system meets timing requirements and no defects have occurred during the packaging process and/or burn-in. The testing process can include testing at several temperatures to assure performance specifications are met. For each process, it is significant ~~for the~~ to have the proper alignment of conductors of the lead frames with the testing assembly.

Please amend the first full paragraph appearing on page 7 as follows:

A tray insert 120 is provided with alignment pins 122 which extend up from the tray insert 120. The alignment pins 122 are inserted through the apertures 112 of the lead frame rail 109, which assist in aligning the conductors 104 of the integrated circuit 100

with the test contactors 152 of the test assembly 150. The test assembly 150 automatically contacts the integrated circuit 100 during the testing process. During manufacture, the lead frame 108 is formed in a lead frame strip. Using a molded carrier ring 110, the density of the lead frame strip is only 6 - 8 units per strip. If the molded carrier ring 110 is removed from each lead frame 108, 12 units can be provided on the lead frame strip. However, if the molded carrier ring 110 is removed from the ~~above-discussed~~ above-discussed lead frames, the lead frames must be aligned using the plastic packaging. Aligning the lead frames using the plastic packaging is difficult since the tolerance of the plastic packaging 106 relative to the lead frame 108 is high. Since individual conductors 104 of the lead frame 108 are being placed closer and closer together, and given the high tolerance of the plastic packaging 106, the integrated circuit 100 is not always in proper alignment with the test assembly 150. This approach results in bent leads and inaccurate alignment of the integrated circuits with the testing equipment due to the high tolerance stack-up.

Please amend the second full paragraph appearing on page 7 as follows:

As illustrated in Figure 2, the present invention provides an alignment tab 210 on a lead frame 200. In another embodiment, a plurality of alignment tabs 210 is provided. The lead frame 200 has a plurality of conductors 202, where the conductors 202 are not connected by a rail or outside frame (not shown), which are generally used during the encapsulation process. The alignment tab 210 is disposed on a first side 204 of the lead frame 200 and extends from the first side 204 to a length for coupling with a receiving member on testing equipment. The shape of the alignment tab 210 corresponds to the shape of the receiving member, such that the alignment tab 210 is received therein. In one embodiment, the alignment tab 210 has a plurality of flat surfaces 215. Alternatively, the alignment tab 210 could have other constructions, such as generally or substantially curved or square ~~shaped, (Figure 7)~~ shaped (Figure 7), or others having multiple flat surfaces.

Please amend the paragraph bridging pages 8 and 9 as follows:

Figure 3 illustrates another embodiment of the alignment feature for a vertical surface mount package (VSMP). A conductive apparatus has a first side 310, a second side 320, and a third side 330. In one embodiment, the conductive apparatus comprises a lead frame 300. A plurality of conductors 340 extends from the third side 330. The first side 310 and the second side 320 each have at least one alignment cut out 350 therein. Alternatively, the alignment cut out 350 could be provided on a single side of the lead frame 300. The lead frame 300 in one embodiment has four alignment cut outs 350. The lead frame 300, alternatively, could have two or more alignment cut outs 350. The alignment cut out 350 is sized large enough that the plastic of the packaging process, including mold flash, will not significantly overlap the alignment cut out 350. In one embodiment, the alignment cut out 350 is a half circle having a radius of .030 ~~inches~~ inch and positioned .010 ~~inches~~ inch away from either the first side 310 or the second side 320. Alternatively, the alignment cut out 350 could have other shapes and sizes such as holes, slots, etc. and yet still be considered within the scope of the present invention. In yet another embodiment, the alignment feature could be a protuberance formed on one of the sides of the lead frame 300 (such as protuberance 450′ shown in Figure 4B). It is desirable that the position of the alignment feature is such that the features do not interfere with mold gates and vents, yet such that package performance and internal lead positioning is acceptable.

Please amend the first full paragraph appearing on page 9 as follows:

Figures 4A and 4B illustrate additional embodiments of the present invention. A VSMP integrated circuit 400 is provided with a lead frame 420 having alignment features 410. The lead frame 420 has leads 430 and an alignment portion 422. The alignment portion 422 includes a tie bar 424 and also other parts of the lead frame 420 which provide internal support to the integrated circuit package. However, the alignment portion 422 does not include outer rails (not shown) or an outer frame (not shown) which are used during the encapsulation process. The lead frame 420 may include alignment cut outs 450 (Figure 4A) or alignment protuberances 450′ (Figure 4B) integral therewith, disposed within the alignment portion 422. The alignment cut

outs 450 and protuberances 450′ are sized large enough such that mold flash from encapsulation, discussed below, will not interfere with nor fill in the alignment cut out 450. In one embodiment, the alignment cut out 450 has ~~a semi-circular~~ semicircular shape. Alternatively, other shapes could be used for the alignment cut out 450. As previously noted, in one embodiment, the protuberances 450′ may be removable along a perforation 451 or other line of weakness if so desired.

Please amend the second full paragraph appearing on page 9 as follows:

A semiconductor die 460 includes circuitry formed ~~on the die 460.~~ thereon. A plurality of bond pads 464 is formed around the periphery of the die 460. The semiconductor die 460 is mounted to the lead frame 420 using leads over chip (LOC) methods, as is known in the art. Electrically conductive wire bonding 480 is used to connect selected bond pads 464 on the die 460 to selected leads 430 or conductors of the lead frame 420.

Please amend the third full paragraph appearing on page 9 as follows:

In one embodiment, the lead ~~frame 429,~~ frame 420, semiconductor die 460, and wire bonding 480 are enclosed in protective, electrically insulative material such that ends 432 of the leads 430 are exposed to allow connection to be made to other electrical components. In another embodiment, the above components are encapsulated in plastic 490, thereby forming an integrated circuit package.

Please amend the first full paragraph appearing on page 10 as follows:

~~A~~ Referring to Figures 5A, 5B, 6A and 6B, a first alignment cut out 550 is disposed in the lead frame 510. The first alignment cut out 550 has a generally circular shape, although other shapes are contemplated. The heat spreader 520 has a second alignment cut out 552. The second alignment cut out 552 has substantially the same shape as the first alignment cut out 550. In addition, the second alignment cut out 552 is aligned with the first alignment cut out 550. The first and second alignment cut outs 550, 552 are sized and located to mate with a test apparatus

such that conductors 512 of the lead frame 510 are sufficiently aligned with contacts on the test assembly and the test contacts. Having the alignment feature on the lead frame 510 permits accurate alignment of the conductors 512 and the test contacts.

Please amend the second full paragraph appearing on page 10 as follows:

In another embodiment illustrated in Figure 7, lead frames 700 and their respective alignment features 710 are formed from a single sheet of material or ~~thin strip, which~~ a thin strip that is etched or stamped into a predetermined shape for connection with a selected chip design. After encapsulation of the lead frame strip 720 in plastic, portions of the lead frame extend out of the respective chip packages to be cut, trimmed, and formed for mounting onto a printed circuit board.

Please amend the second full paragraph appearing on page 11 as follows:

Advantageously, the alignment tabs and the alignment cut outs on the lead frame ~~allows~~ allow for more precision during alignment of the integrated circuit during testing. The alignment features assist in achieving higher yields after lead conditioning and after testing. During testing, yield loss can occur due to misconnection at test. The alignment features reduce rejects in testing for bent leads caused by improper alignment of the test contacts. The step of retesting of parts failing initial testing due to misalignment is eliminated. The scan time is reduced since the parts can be pre-aligned in the shipping and handling tray. The end user benefits since the parts have built-in alignment features for better placement accuracy. In addition, the built-in features are inexpensive to incorporate into existing designs.

Please amend the paragraph bridging pages 11 and 12 as follows:

It is to be understood that the above description is intended to be ~~illustrative,~~ illustrative and not restrictive. Many other embodiments will be apparent to those of skill in the art upon reviewing the above description. For instance, the alignment feature can be incorporated with a variety of packages such as, but not limited to, vertical surface mount packages, horizontal

surface mount packages, or through-hole applications. The scope of the invention should, therefore, be determined with reference to the appended claims, along with the full scope of equivalents to which such claims are entitled.